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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/983,057	10/23/2001	Isao Tsuruma	Q66788	8940

7590 02/03/2004

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2100 Pennsylvania Avenue, NW  
Washington, DC 20037-3213

EXAMINER
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LEE, JOHN D

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 02/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	Application No. 09/983,057	Applicant(s) TSURUMA, ISAO	
	Examiner John D. Lee	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 November 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 3-8 and 10-20 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-8, 11-14, 18-20 is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4, 10, 15 is/are rejected.
- 7) ☒ Claim(s) 16, 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All   b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

This Office action is responsive to applicant's communication filed on November 26, 2003.

Claim 20 is objected to for the following minor informality. At the end of the fourth-from-last line of new claim 20, the word "the" should be deleted since there is no previous recitation in the claim of "ion implantation". Appropriate correction is required.

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 4, 10, and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,652,674 to Mizuuchi et al (of record). Regarding claims 1 and 15, Mizuuchi et al discloses a wavelength converting element comprising an optical crystal substrate, inverted domains formed through the entire thickness of the substrate, and a waveguide which intersects the inverted domains and which can be formed by ion or proton implantation (see column 21, lines 1-4, column 24, lines 20-26, and column 39, lines 9-13). With respect to claims 3, 4, and 10, Mizuuchi et al discloses methods of manufacturing a wavelength converting element like that of claim 1, wherein the waveguide can be formed either before or after the inverted domains are formed (see column 39, lines 19-27). Note also that in all embodiments of Mizuuchi et al, the waveguide is a sub-surface waveguide, meaning that it is formed at "an interior" of the optical crystal substrate. Even though no specific example is given in Mizuuchi et al of a waveguide formed by "proton implantation", the statement in column 21, lines 1-4,

would make this waveguide formation entirely obvious to a person of ordinary skill in the art. First of all, proton exchange is specifically mentioned as a waveguide formation method. If protons are “exchanged” within the substrate, they are “implanted” therewithin. Even if this equivalency is not subscribed to, the words “such as” in column 21, lines 1-2, of the reference makes a proton implantation method obvious.

Claims 5-8, 11-14, and 18-20 are allowed. In addition to the reasons for allowability set forth in the previous Office action, Mizuuchi et al does not disclose or suggest a wavelength converting element like that claimed, wherein the  $G \cdot \tan \theta + p/4$  limitation (for waveguide depth) is required.

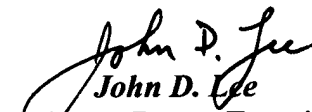
For this same reason, claims 16 and 17 are objected to as being dependent upon a rejected claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims.

Applicant's arguments filed November 26, 2003, with respect to the rejected claims, have been fully considered but are not deemed to be persuasive. Applicant is relying totally on the claim limitation of “proton implantation”, arguing that Mizuuchi et al fails to disclose or suggest the use of proton implantation as a method for forming the waveguide. Pointing to one of the reference sections mentioned by the Examiner in the rejection, applicant has ignored other pointed-to portions (such as column 21, lines 1-2) which clearly point out the obviousness of using this method. As stated in the rejection above, if protons are “exchanged” within the substrate, they are “implanted” therewithin, and even if this equivalency is not subscribed to, the words “such as” in column 21, lines 1-2, of the reference makes a proton implantation method obvious. The rejection of claims 1, 3, 4, 10, and 15 is therefore maintained.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR § 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and an advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR § 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning the merits of this communication should be directed to Examiner John D. Lee at telephone number (571) 272-2351. The Examiner's normal work schedule is Tuesday through Friday, 6:30 AM to 5:00 PM. Any inquiry of a general or clerical nature (i.e. a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at telephone number (703) 308-0956, to the technical support staff supervisor (Team 2) at telephone number (571) 272-1615, or to the Technology Center 2800 Customer Service Office at telephone number (571) 272-1626.

  
**John D. Lee**  
**Primary Patent Examiner**  
**Group Art Unit 2874**